



MCIB

Marine Casualty Investigation Board
Bord Imscrúdú Taisní Muirí

**REPORT INTO THE FATAL
INCIDENT ON THE
'FV CU NA MARA'
APPROXIMATELY
130 NAUTICAL MILES WEST
OF SLEA HEAD
ON 30th JUNE 2016**

**REPORT NO. MCIB/261
(No.3 OF 2018)**

The Marine Casualty Investigation Board (MCIB) examines and investigates all types of marine casualties to, or on board, Irish registered vessels worldwide and other vessels in Irish territorial waters and inland waterways.

The MCIB objective in investigating a marine casualty is to determine its circumstances and its causes with a view to making recommendations for the avoidance of similar marine casualties in the future, thereby improving the safety of life at sea.

The MCIB is a non-prosecutorial body. We do not enforce laws or carry out prosecutions. It is not the purpose of an investigation carried out by the MCIB to apportion blame or fault.

The legislative framework for the operation of the MCIB, the reporting and investigating of marine casualties and the powers of MCIB investigators is set out in The Merchant Shipping (Investigation of Marine Casualties) Act, 2000.

In carrying out its functions the MCIB complies with the provisions of the International Maritime Organisation's Casualty Investigation Code and EU Directive 2009/18/EC governing the investigation of accidents in the maritime transport sector.



Leeson Lane, Dublin 2.
Telephone: 01-678 3485/86.
Fax: 01-678 3493.
email: info@mcib.ie
www.mcib.ie

The Marine Casualty Investigation Board was established on the 25th March, 2003 under the Merchant Shipping (Investigation of Marine Casualties) Act, 2000.

The copyright in the enclosed report remains with the Marine Casualty Investigation Board by virtue of section 35(5) of the Merchant Shipping (Investigation of Marine Casualties) Act, 2000. No person may produce, reproduce or transmit in any form or by any means this report or any part thereof without the express permission of the Marine Casualty Investigation Board. This report may be freely used for educational purposes.

**REPORT INTO THE FATAL
INCIDENT ON THE
'FV CU NA MARA'
APPROXIMATELY
130 NAUTICAL MILES WEST
OF SLEA HEAD
ON 30th JUNE 2016**

**REPORT NO. MCIB/261
(No.3 OF 2018)**



Definitions:

Bridle: Wire rope connecting the trawl doors to the net.

G-Hook, Recessed Link, Kelly's Eye: Please see Appendix 1. Annotated photo showing these items of tackle that form part of the equipment associated with the operation of the fishing nets. It can be seen in the photo how the G-Hook can be linked into and removed from the recessed link by slipping the "gap" in the G-Hook over the flattened portions of the recessed link.

"Geeing-on and Geeing-off": Connecting and disconnecting G-hooks.

Personal Fall Protection System: Fall prevention, work restraint, work positioning, fall arrest or rescue system: Source Safety, Health and Welfare at Work (General Application) Regulations 2007 S.I. No. 299 of 2007

A Personal Fall Protection System may comprise wholly, or in part of, a Safety Harness: A Personal Fall Protection System includes a Lanyard or Tether which is a flexible rope of varying types and lengths which facilitates personnel "tying-off" to a fixed structure in order to restrict or prevent falling.

Stanchion: A stanchion is a sturdy upright fixture that provides support for some other object. It can be a permanent fixture.

Shooting the nets: Deploying the nets into the water. Unfurling the nets from the net drums, allowing them to trail astern of the vessel and then transferring the net attachments to the towing winches.

Trawl Doors: Large rectangular plates which are used to keep the mouth of the trawl net open. Trawl doors are made of timber or steel and are positioned in such a way that the hydrodynamic forces acting on them when the net is towed along the seabed, push outwards and prevent the mouth of the net from closing.

Trawl Warp or simply Warps: A rope passing through a block used in managing or dragging a trawl net.

	PAGE
1. SUMMARY	4
2. FACTUAL INFORMATION	5
3. NARRATIVE	9
4. ANALYSIS	12
5. CONCLUSIONS	15
6. SAFETY RECOMMENDATIONS	16
7. APPENDICES	17
8. NATURAL JUSTICE - CORRESPONDENCE RECEIVED	28

1. SUMMARY

On the 30th June 2016 the vessel '*FV Cu Na Mara*' commenced fishing for prawns (nephrops) about 130 nautical miles West of Slea Head. The nets were being deployed for the first trawl. At approximately 14.00 hrs the two nets were unwound from the two net drums and trailed astern of the vessel in the water. In the process of transferring over the attachment of the nets from the net drums to the middle towing winch, one of the crewmembers went over the stern of the vessel and into the water. The Skipper and the other crewmembers responded immediately by bringing the vessel astern to assist the Crewmember in the water. The Crewmember was wearing a Personal Floatation Device (PFD) which inflated. He was quickly recovered from the water by the remaining crew and first aid was administered on board. He was deemed to have died at approximately 15.10 hrs.

Note all times are local time = UTC + 1

2. FACTUAL INFORMATION

2.1. The vessel

Name:	<i>'FV Cu Na Mara'</i> .
Type of Vessel:	Fishing Trawler (see Appendix 7.1 Photograph Nos. 1 & 2).
Flag:	Irish.
Port of Registry:	Skibbereen, Co. Cork.
Port Letters & Number:	S224.
IMO No:	IRL 000112153.
Call Sign:	E115777.
LOA:	24.9 metre (m).
Length:	21.7 m.
Beam:	8 m.
Depth:	3.9 m.
Gross Tonnage:	233.
Year:	2000.
Registered Owner:	Iasc Geal Teoranta, Dingle, Co. Kerry. Purchased in 2007.
Main Engine:	Caterpillar 615 kW.
Deck Machinery:	The vessel is designed for the towing of twin rig trawl nets and is fitted with three single drum towing winches. One winch on the port side main deck. One winch on the starboard main deck. One winch on the centre of the upper main deck. The net drums are on the upper main deck aft. They are split, two on the port side and two on the starboard side.

When the vessel was purchased by the current owner in 2007 the stern at the upper deck level was altered by closing the openings underneath the rollers through which the nets could previously have been shot and hauled.

Capacities: Fish hold 100-mtr³
Fuel 43- mtr³
Fresh Water 12- mtr³

PFD worn by Crewmember 1 - Mullion Neptune 150 Regular fitted with hydrostatic activation device.

2.2. Voyage Particulars

The vessel departed Dingle at 21.30 hrs on the 29th June 2016 to fish for prawns with a Skipper and six crewmembers on board. In this report the crewmembers are referred to as Crewmember 1, Crewmember 2, up to Crewmember 6. The Skipper came on watch at 08.15 hrs on the 30th June 2016. At 13.45 hrs the Skipper called the crew by the usual means of sounding the watch alarm as they approached the fishing grounds on the Porcupine Bank. Crewmember 2 went to the engine room to do routine checks and then stayed on the main deck below to man the port and starboard towing winches. The other five crewmembers went to the upper main deck aft to prepare to shoot the trawl nets.

2.3. Marine Incident Information

Type: Very Serious Marine Casualty.
Date: 30th June 2016.
Time: Circa 14.28 hrs.
Position: 130 NM West Sleá Head.
51° 43.84N 013° 54.55W.
Ship Operation: Fishing Vessel.
Location: Ireland, South West Coast.
Human factors: Having to reach/step-up overhead.
Physical factors: Trawl net connections located overhead.
Consequences: Death of one Crewmember.

Autopsy report:	Death due to drowning.
Conditions:	Estimate of weather conditions 130NM west of Sleah Head (Position 51°43.84N 13°54.55W) 12 Noon to 12 midnight (see Appendix 7.2 Met Éireann Weather Report).
Wind:	Winds generally were from between 260 and 280 degrees (mean speeds of 15 to 18 knots) but veered 290 degrees and increased 19 to 22 knots late in the period with gusts up to 33 knots. This could be described as Beaufort Force 5 to 6 with higher gusts (Force 7) (see Appendix 7.3 Cardinal Point of Compass).
Weather:	Occasional light rain clearing to isolated light showers.
Temperature:	The air temperature ranged from 12 to 14 degrees Celsius: the corresponding sea temperature a steady 14 degrees.
Visibility:	Moderate (2 to 5 nm); improved good (Greater than 9 nm) as rain cleared.
Waves:	Wave directions were generally from 270 degrees. The significant wave height ranged from 2.5 m at first to 3 m towards the end of the time. (Moderate increasing rough). The wave periods were 5 to 6 seconds.

2.4. Shore Authority Involvement

Irish Coast Guard

13.19 hrs	'FV Cu Na Mara' advised they have recovered a Crewmember from the water and were administering Cardiopulmonary Resuscitation (CPR).
13.20 hrs	R115 Tasked for Medevac. Estimated Time of Arrival (ETA) on scene 2 hrs 15 mins.
13.44 hrs	C252 Tasked for callout.
13.52 hrs	Medico Cork Radio link established with vessel. The Doctor advised the Skipper that the casualty was deceased.

13.56 hrs Aero Medevac service cancelled. All units stood down.

14.33 hrs Vessel bound for Dingle: ETA 1st July 10.30 hrs.

An Garda Síochána

Vessel arrived at Dingle Harbour on the 1st July at approximately 11.00 hrs and was met by An Garda Síochána and a local medical practitioner. Crewmember 1 was pronounced dead by the medical practitioner at 11.30 hrs.

3. NARRATIVE

- 3.1. The vessel had left the port of Dingle in County Kerry on the 29th June 2016 to fish for nephrops, a species of prawn off the South West Coast of Ireland. The vessel had steamed for about 16 hours before it arrived at the Porcupine Bank fishing grounds.
- 3.2. The crew were attending to watches and resting during the voyage. Crewmember 1 (the deceased) did not do a watch and was attending to cooking duties.
- 3.3. The Skipper called the crew by sounding the watch alarm to make them aware that the vessel had arrived at the fishing grounds. Crewmember 2 went to the engine room to do routine checks and then stayed on the main deck below to man the port and starboard towing winches. The other five crewmembers went to the upper main deck aft to prepare to shoot the trawl nets.
- 3.4. The crew fitted the sensors to the two trawl doors ready for trawling. The output from these sensors is displayed in the wheelhouse to show the position of the symmetry of the nets in the water relative to the vessel.
- 3.5. The nets on the vessel are double bag three warp twin rig configuration. To deploy or shoot the two nets onto the sea bed it is necessary to firstly unwind the nets off the net drums over the stern of the vessel and into the water. The speed of the vessel is regulated to ensure that the nets trail astern of the vessel. This was the first trawl of the voyage and this procedure took about ten minutes.
- 3.6. Once the nets are in the water, their attachment to the vessel has to be changed over from the net drums to the three towing winches.
- 3.7. The procedure involves synchronising the speed of the vessel, the operation of the net drums and the operation of the towing winches. The towing winches take up the load and the net drum connections are then disconnected.
- 3.8. The disconnection procedure involves manually reaching up and unclipping the slack G-hook connections from the recessed links to which they are attached (see Appendix 7.1 Photograph No. 3 showing examples of G-hooks and recessed links).
- 3.9. At the time of the incident the crew were deployed as shown in Appendix 7.4 which is a plan view sketch of the vessel's upper main deck showing the locations of the Skipper and crewmembers at the time of the incident.

- 3.10. Crewmember 2 was below on the main deck attending to the port and starboard towing winches located on that deck and was not with the remainder of the crewmembers on the upper main deck.
- 3.11. The Skipper was in the wheelhouse and had control of the vessel. Crewmember 4 was stationed on the upper deck at the controls for the middle towing winch located on the upper main deck. Crewmembers 3 and 6 had assumed the task of unclipping the starboard side and port side net connections respectively. The controls for the net drums are located at the stern on the starboard pillar of the gantry. Crewmember 3 was attending to these controls.
- 3.12. Crewmember 1 (the deceased) was stationed about the middle of the upper main deck at the stern and had assumed the task of unclipping the two middle net drum attachments. Crewmember 5 had also been at this location (about the middle of the upper main deck at the stern) but just prior to the incident had gone forward towards the middle winch on the upper main deck.
- 3.13. Crewmember 1 stepped up either partially or fully onto the after rail in order to unclip the G-hook. He was using a stanchion for support and reaching out for the G-hook but he got into difficulties, lost his balance and fell over the stern rail into the water. He may have struck his head on the clump weight as he fell. See photograph No. 2 showing the clump weight and photograph No. 4 of the upper main deck middle with indicative location for Crewmember 1.
- 3.14. The vessel has a freeboard of about 4 m at the stern and the wave heights were about 2.5 m. It is estimated that Crewmember 1 fell between 1.5 m to 6.5 m depending on how the vessel pitched and rolled when he fell. He was wearing a hard hat, boots, oilskins and he had a PFD which inflated when it was immersed in the water.
- 3.15. Almost immediately Crewmember 3 called Man Over Board (MOB) alerting the Skipper and the other crewmembers that Crewmember 1 had entered the water. The Skipper brought the vessel astern and a lifebuoy was thrown close to Crewmember 1 who had drifted about 10 m away from the vessel.
- 3.16. Crewmember 1 managed to kick off his boots and made strenuous attempts to reach the lifebuoy but the sea state and water filled oilskins hampered his efforts and he was not able to reach it. A second lifebuoy was thrown to Crewmember 1 but at this stage his PFD had deflated, he was in difficulty, and he could not reach that lifebuoy either.
- 3.17. By this time Crewmember 1 was in serious difficulty and his head was submerged. Crewmember 3 then entered the water and swam to Crewmember 1. He got hold of both Crewmember 1 and the second lifebuoy. The Skipper manoeuvred the vessel such that the other crewmembers managed to pull both of them to the port side ladder by hauling on the lifebuoy attachment rope.

- 3.18. Crewmember 6 went down the port side ladder into the water and with Crewmember 3 attempted to get a rope around Crewmember 1 but it was too thick and could not be put in place. A smaller 12 mm diameter rope was then successfully put in place and Crewmember 1 was hauled up out of the water and laid on the port side upper deck just aft of the wheelhouse.
- 3.19. First aid and the emergency oxygen set were administered by the Skipper and crew but Crewmember 1 did not survive.
- 3.20. The vessel hauled in the nets and proceeded to Dingle Harbour.
- 3.21 The coroner's autopsy report provided to the Marine Casualty Investigation Board (MCIB) states the following conclusions in respect of cause of death "acute cardio-respiratory failure due to drowning." The results of the autopsy are provided to the MCIB and are provisional at the time of publication. The determination of the cause of death is a matter for the coroner's inquest.

4. ANALYSIS

- 4.1. This weather was normal for the vessel with winds 15 to 18 knots (fresh breeze), sea state moderate, bright with occasional light rain. The weather was suitable for the shooting of the nets and commencement of fishing.
- 4.2. The Merchant Shipping (Safety of Fishing Vessels) (15-24 Metres) regulations, 2007, S.I. No. 640 of 2007 Part 6 sets out the requirements for the protection of the crew. Specifically this requires:

102 (1) Owners shall ensure that their vessels are operated without endangering the safety and health of the crew

(2) The crew shall be given training and instructions on health and safety matters on board fishing vessels and in particular on accident prevention.

- 4.3. It was the first trawl of the voyage and as such the warp wires may not have been fully bedded-in on the winch drums. The reason being that in port, the warps were unwound from the winches and re-wound onto the winches without a load on them. At sea when trawling, when they are re-wound onto the winch drums it is against the pull of the nets in the water and they bed-in correctly. It is not possible to determine if this was the case here. It is possible that as the centre winch took up the load, an incorrectly bedded section of the warp disrupted the smoothness of the changeover from the net drums to the centre winch and co-incident with this, Crewmember 1 was attempting to unclip the G-hook.
- 4.4. The wind direction was onto the starboard side of the vessel and the heading was between 168 and 191 degrees that is, South. Thus the nets tended to lie towards starboard as they trailed over the stern of the vessel. The Skipper steered the vessel and maintained the speed of the vessel accordingly to compensate for the wind direction and maintain the position of the nets to the stern of the vessel.
- 4.5. The practice on the vessel is that two crewmembers are stationed at stern middle station to un-clip the two middle net drum connections, particularly in heavy weather conditions. On this occasion Crewmember 1 was alone at this station as Crewmember 5 had gone forward toward the middle winch. This left Crewmember 1 alone to reach up and unclip the two middle net drum connections. Crewmember 1 was relatively new to the vessel but was an experienced fisher and had at times performed the task on previous voyages.
- 4.6. The position of the G-hook relative to the deck is a function of how the vessel is manoeuvred and the tension or slack on the warps and ropes. The point at which these criteria coincide most favourably is the point that requires the least amount of reach by the crewmember assigned to the task. The correct technique and timing of the unclipping by the crew is essential.

- 4.7. The practice on board to reach the G-hooks at stern middle station is for the crewmember to step up onto the steelwork at the stern rail of the vessel, hold onto one of the stanchions and then use two hands to unclip the relevant G-hook.
- 4.8. The Risk Assessment Documentation on the vessel addresses the hazard of falling overboard posed by stepping up in this fashion by stating that a “safety harness will be provided”. The term safety harness is not defined in the documentation.
- 4.9. MOB retrieval drill is to manoeuvre the vessel alongside the casualty and then secure him alongside with a line or a boathook until a means of lifting on board can be rigged. It is also recommended that an immediate “MAYDAY” call be made by radio in the event of a MOB situation.
- 4.10. The practice on board for clipping on and unclipping the G-hooks at stern middle station is for the crewmember to step up onto the steelwork at the stern of the vessel without a personal fall protection system to protect them from falling overboard in the event of a mishap.
- 4.11. Crewmember 1 was wearing a PFD equipped with a stainless steel D ring which can be used in conjunction with a lanyard or tether for tying-off as part of a personal fall protection system. The D ring was not used for this purpose and Crewmember 1 was not tethered to prevent him from falling overboard when he got into difficulty.
- 4.12. The nets are shot and hauled about 30 times in the course of a typical fishing trip. Therefore the relevant G-hooks have to be attended to about 60 times a trip. The crewmembers rely on communication with each other, when hauling or slacking off on ropes or chains. Through familiarity and experience a smooth technique for “Geeing-on and Geeing-off” had been developed on board. The Skipper deemed that the risks of wearing a personal fall protection system posed a greater risk to crewmembers working at the stern of the vessel than the risk of falling over the stern rail. The risks included exposure to being caught by the ropes and the chains associated with the nets as the vessel pitched and rolled in the seaway, or the rotation of the winches and net drums.
- 4.13. The view of the scene on the Closed-Circuit Television (CCTV) screen in the wheelhouse does not show the actual location where Crewmember 1 had been stationed.
- 4.14. The deflation of the PFD had a major negative impact in the sequence of events and the outcome. The deflation appears to have resulted from the puncturing of the air containment bladder of the PFD by steel wires that protruded from the ropes that were in the water astern of the vessel.

- 4.15. The recovery of Crewmember 1 from the water was frantic and haphazard from the point of view of actually being able to get a purchase (grip sufficient to lift) onto his unconscious body. At the first attempt the rope proved to be too cumbersome and it was only at the second attempt that a rope was fixed, and the Skipper and crew were successful in getting Crewmember 1 up out of the water and onto the upper deck.
- 4.16. Crewmember 3 in entering the water without a lifeline could have resulted in a double fatality.

5. CONCLUSIONS

- 5.1. The task of shooting the nets had been performed innumerable times during the current ownership of the vessel. On each occasion the G-hooks had been unclipped without any significant incident. On this occasion a tipping point was reached where a combination of factors such as stepping up and reaching up proved to be beyond the abilities of Crewmember 1. He got into difficulty and fell over the stern of the vessel.
- 5.2. Stepping up, either partially or fully, by the crew to achieve the task without the benefit of a personal fall protection system was the practice on board.
- 5.3. When Crewmember 1 entered the water he was alive and made attempts to reach the first lifebuoy. The deflation of his PFD was a major impediment to his survival. The ensuing rescue attempts by the Skipper and the remaining crew were hampered by a number of factors, such as the sea state, the inability to get to him quickly enough whilst his head was above water, and the inability to get a purchase on his unconscious body and lift him up out of the water and onto the deck.
- 5.4. No evidence was provided demonstrating that the crew had received the training as required under S.I. No.640 of 2007 Regulation 102 on health and safety matters. S.I. No. 640/2007 - Merchant Shipping (Safety of Fishing Vessels) (15-24 Metres) Regulations 2007 per below:

“102 (1) Owners shall ensure that their vessels are operated without endangering the safety and health of the crew.

(2) The crew shall be given training and instructions on health and safety matters on board fishing vessels, and in particular, on accident prevention.”

6. SAFETY RECOMMENDATIONS

- 6.1. The owner/skipper should ensure that safety documentation for the vessel takes into account a risk assessment and hazard analysis in respect of shooting and hauling the nets, and the use of personal fall protection systems by the crew.
- 6.2. The owner/skipper of the vessel should ensure that all crew are in compliance with the training and instruction on health and safety requirements as set out in S.I. No. 640 of 2007

7. APPENDICES

	PAGE
7.1. Photographs	18
7.2. Met Éireann Weather Report	22
7.3. Cardinal Points of Compass	26
7.4. Location of Crew on Board	27

Appendix 7.1 Photographs.



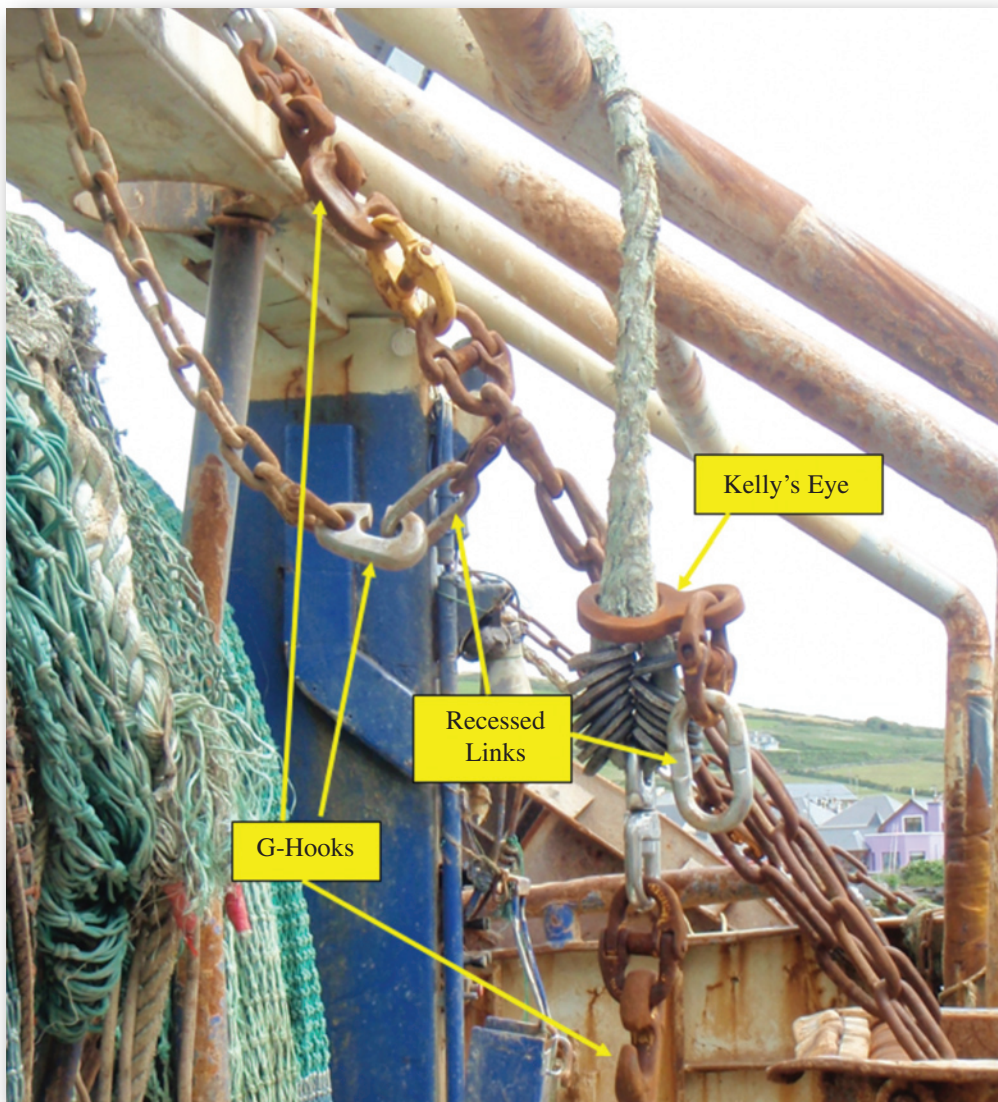
Photograph No. 1: Photograph of the vessel forward.

Appendix 7.1 Photographs.



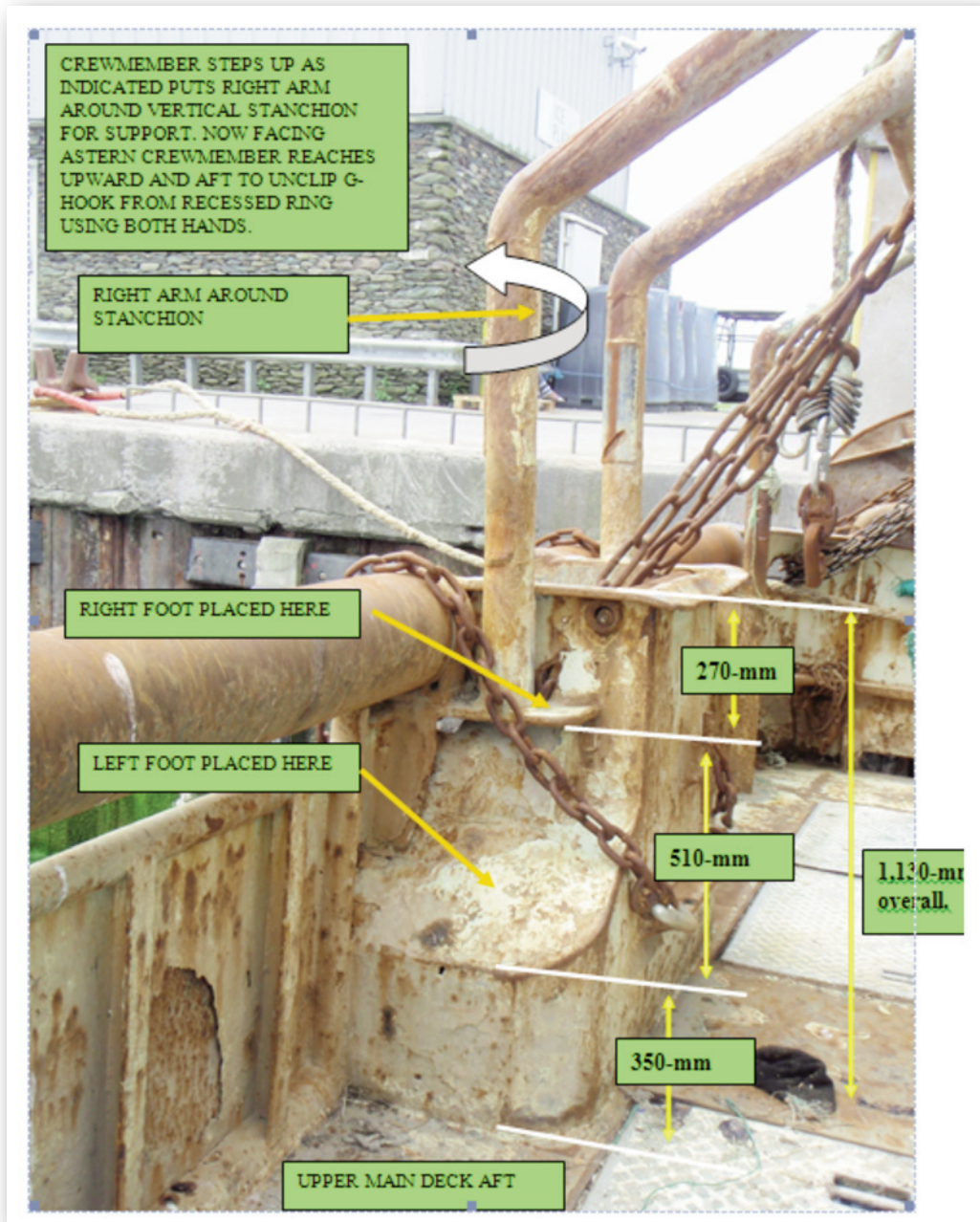
Photograph No. 2: Stern of vessel. Annotated to indicate the Gantry, Middle Trawl Block, Clump Weight and the Starboard Trawl Block and Trawl Door.

Appendix 7.1 Photographs.



Photograph No. 3: G-Hooks, Recessed Links and Kelly's Eye.

Appendix 7.1 Photographs.



Photograph No. 4: Upper main deck middle with indicative locations for Crewmember 1.

Appendix 7.2 Met Éireann Weather Report.



MET ÉIREANN
The Irish Meteorological Service

Glasnevin Hill, Cnoc Ghlas Naíon Tel: +353-1-806 4200
Dublin 9, Ireland. Baile Átha Cliath 9, Éire. Fax: +353-1-806 4247
www.met.ie E-mail: met.eireann@met.ie

5-August-2016

Our Ref. WS1730/1608_9
Your Ref. MCIB/12/261

Re: Estimate of weather conditions 130NM west of Sleah Head (Position 51°43.84N 13°54.55W) between 12 Noon on the 30th of June 2016 to 12 Midnight.

Meteorological Situation: Fresh west to northwest airflow. Weak occlusion crossed area mid afternoon.

Wind: Winds generally were from between 260 and 280 degrees (mean speeds of 15 to 18 knots), but veered 290 degrees and increased 19 to 22 knots late in the period and with gusts up to 33 knots. This could be described as Beaufort Force 5 to 6 with higher gusts (Force 7).

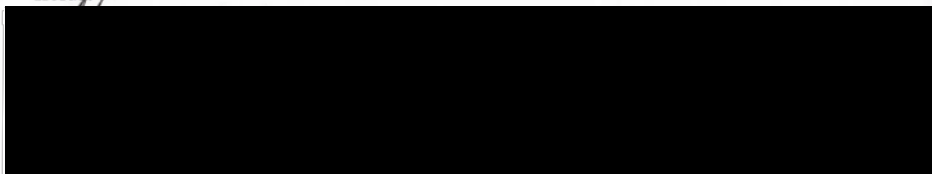
Weather: Occasional light rain clearing to isolated light showers.

Temperatures: The air temperature ranged from 12 to 14 degrees Celsius; the corresponding sea temperature a steady 14 degrees.

Visibility: Moderate (2 to 5 nm); improved good (Greater than 9 nm) as rain cleared.

Waves Wave directions were generally from 270 degrees. The significant wave height ranged from 2.5 meters at first to 3.0 meters towards the end of the time. (Moderate increasing rough). The wave periods were 5 to 6 seconds.

Please note: Wave data was derived mainly from interpolation from Met Eireann's Buoy recorders (namely M3 and M6), together with an analysis of the wind history and wind fields.



Appendix 7.2 Met Éireann Weather Report.



MET ÉIREANN
The Irish Meteorological Service

Glasnevin Hill, Cnoc Ghlas Naíon, Tel: +353-1-806 4200
 Dublin 9, Ireland. Baile Átha Cliath 9, Éire. Fax: +353-1-806 4247
 www.met.ie E-mail: met.eireann@met.ie

Beaufort Scale of Wind					
Force	Description	Speed*		Specification -sea	Wave height** (metres)
		knots	km/hr		
0	Calm	<1	<1	Sea like mirror	
1	Light air	1-3	1-5	Ripples	0.1 (0.1)
2	Light breeze	4-6	6-11	Small wavelets	0.2 (0.3)
3	Gentle breeze	7-10	12-19	Large wavelets, crests begin to break	0.6 (1)
4	Moderate breeze	11-16	20-28	Small waves becoming longer, frequent white horses	1 (1.5)
5	Fresh breeze	17-21	29-38	Moderate waves, many white horses, chance of spray	2 (2.5)
6	Strong breeze	22-27	39-49	Large waves, white foam crests, probably some spray	3 (4)
7	Near gale	28-33	50-61	Sea heaps up, streaks of white foam	4 (5.5)
8	Gale	34-40	62-74	Moderately high waves of greater length	5.5 (7.5)
9	Strong gale	41-47	75-88	High waves, dense streaks of foam, spray may reduce visibility	7 (10)
10	Storm	48-55	89-102	Very high waves, long overhanging crests, visibility affected	9 (12.5)
11	Violent storm	56-63	103-117	Exceptionally high waves, long white foam patches cover sea	11.5 (16)
12	Hurricane	64+	117 & over	Air filled with foam and spray, sea completely white	14 (-)

*Speed = mean speed at a standard height of 10 metres.
 **Wave height is only intended as a guide to what may be expected in the open sea.
 Bracketed figures indicate the probable maximum wave height.

Appendix 7.2 Met Éireann Weather Report.



MET ÉIREANN
The Irish Meteorological Service

Glasnevin Hill,
Dublin 9, Ireland.

Cnoc Ghlas Naíon
Baile Átha Cliath 9, Éire.
www.met.ie

Tel: +353-1-806 4200
Fax: +353-1-806 4247
E-mail: met.eireann@met.ie

Wave Heights / State of Sea
The wave height is the vertical distance between the crest and the preceding or following trough. The table below gives a description of the wave system associated with a range of significant wave heights. The Significant wave height is defined as the average height of the highest one-third of the waves. (It is very close to the value of wave height given when making visual observations of wave height.)

Sea State (Descriptive)	Significant Wave height in meters
Calm	0 – 0.1
Smooth (Wavelets)	0.1 – 0.5
Slight	0.5 – 1.25
Moderate	1.25 – 2.5
Rough	2.5 – 4
Very rough	4 – 6
High	6 – 9
Very high	9 – 14
Phenomenal	Over 14

Individual waves in the wave train will have heights in excess of the significant height. The highest wave of all will have a height about twice the significant height


Visibility Descriptions of visibility mean the following:

Visibility (Descriptive)	Visibility in nautical miles (kilometres)
Good	More than 5 nm (> 9 km)
Moderate	2 – 5 nm (4 – 9 km)
Poor	0.5 – 2 nm (1 – 4 km)
Fog	Less than 0.5 nm (< 1 km)

Note:

If there are no measurements or observations available for an exact location, these estimated conditions are based on all available meteorological measurements and observations which have been correlated on the routine charts prepared by Met Éireann.

Appendix 7.2 Met Éireann Weather Report.

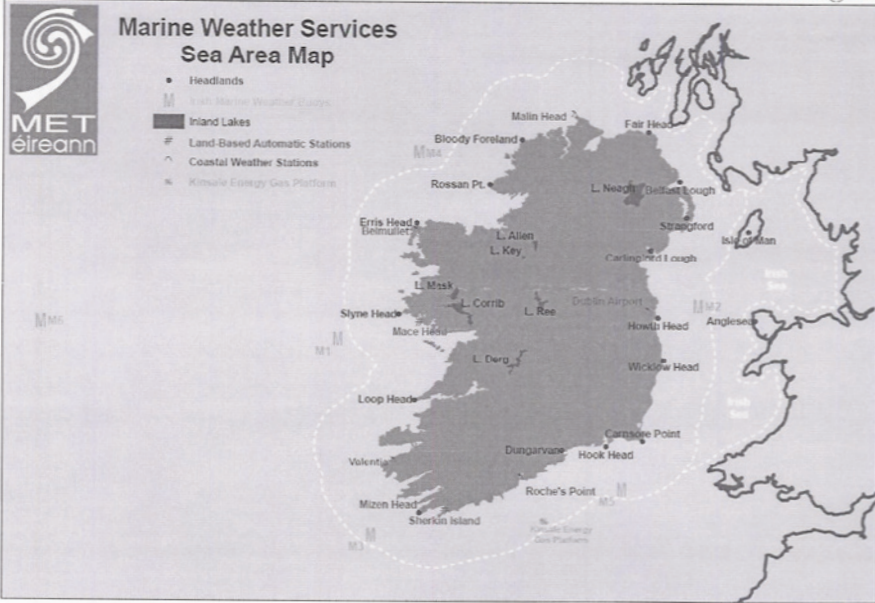


MET ÉIREANN
The Irish Meteorological Service

Glasnevin Hill, Dublin 9, Ireland. Cnoc Ghlas Naíon, Baile Átha Cliath 9, Éire. Tel: +353-1-806 4200
www.met.ie Fax: +353-1-806 4247 E-mail: met.eireann@met.ie

Marine Weather Services Sea Area Map

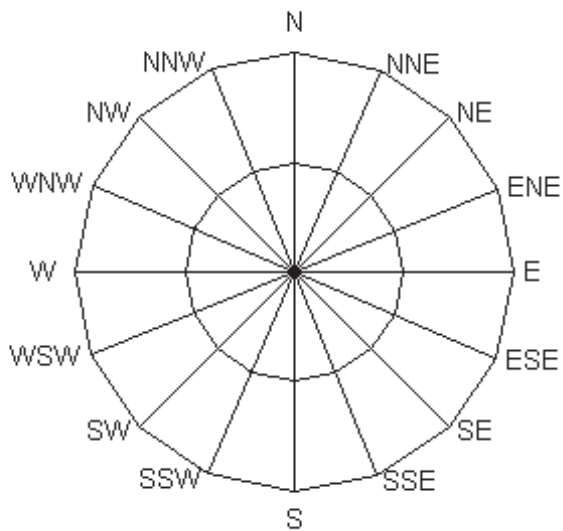
- Headlands
- M Irish Marine Weather Cudges
- Inland Lakes
- # Land-Based Automatic Stations
- Coastal Weather Stations
- ▲ Kinsale Energy Gas Platform



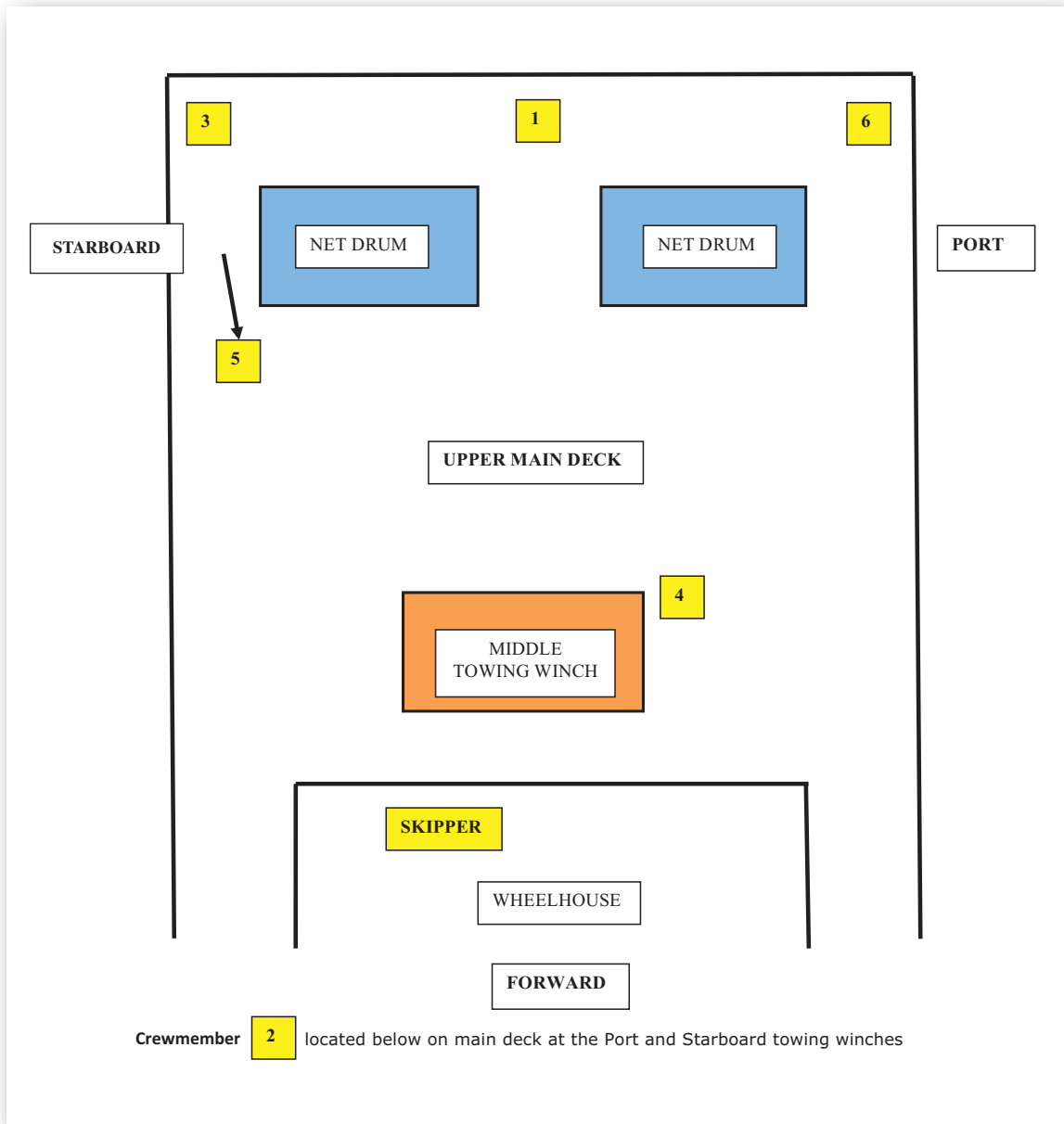
APPENDIX 7.3

Appendix 7.3 Cardinal Points of Compass.

Cardinal Direction	Degree Direction
N	348.75 - 11.25
NNE	11.25 - 33.75
NE	33.75 - 56.25
ENE	56.25 - 78.75
E	78.75 - 101.25
ESE	101.25 - 123.75
SE	123.75 - 146.25
SSE	146.25 - 168.75
S	168.75 - 191.25
SSW	191.25 - 213.75
SW	213.75 - 236.25
WSW	236.25 - 258.75
W	258.75 - 281.25
WNW	281.25 - 303.75
NW	303.75 - 326.25
NNW	326.25 - 348.75



Appendix 7.4 Location of Crew on Board.



NATURAL JUSTICE - CORRESPONDENCE RECEIVED

Section 36 of the Merchant Shipping (Investigation of Marine Casualties) Act, 2000 requires that:

- “36 (1) Before publishing a report, the Board shall send a draft of the report or sections of the draft report to any person who, in its opinion, is likely to be adversely affected by the publishing of the report or sections or, if that person be deceased, then such person as appears to the Board best to represent that person’s interest.
- (2) A person to whom the Board sends a draft in accordance with subsection (1) may, within a period of 28 days commencing on the date on which the draft is sent to the person, or such further period not exceeding 28 days, as the Board in its absolute discretion thinks fit, submit to the Board in writing his or her observations on the draft.
- (3) A person to whom a draft has been sent in accordance with subsection (1) may apply to the Board for an extension, in accordance with subsection (2), of the period in which to submit his or her observations on the draft.
- (4) Observations submitted to the Board in accordance with subsection (2) shall be included in an appendix to the published report, unless the person submitting the observations requests in writing that the observations be not published.
- (5) Where observations are submitted to the Board in accordance with subsection (2), the Board may, at its discretion -
- (a) alter the draft before publication or decide not to do so, or
 - (b) include in the published report such comments on the observations as it thinks fit.”

The Board reviews and considers all observations received whether published or not published in the final report. When the Board considers an observation requires amendments to the report that is stated beside the relevant observation. When the Board is satisfied that the report has adequately addressed the issue in the observation, then the observation is ‘Noted’ without comment or amendment. The Board may make further amendments or observations in light of the responses from the Natural Justice process.

‘Noted’ does not mean that the Board either agrees or disagrees with the observation.

8. NATURAL JUSTICE - CORRESPONDENCE RECEIVED

There was no correspondence received in the Natural Justice process for this investigation.



Leeson Lane, Dublin 2.
Telephone: 01-678 3485/86.
Fax: 01-678 3493.
email: info@mcib.ie
www.mcib.ie

